

Some steps to help identify the type of hybridized orbitals needed

① Draw the complete Lewis structure

- Find the VSEPR "formula" : $A X_m E_n$

② Identify the number of σ bonds and lone pairs (on the central atom) using the Lewis structure.

- The number of σ bonds = m (the # of surrounding atoms)
- The number of lone pairs = n (the # of pairs of valence electrons on the central atom)

③ Identify the type of hybridization:

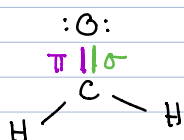
- If $m+n = 4$: Will need 4 hybrid orbitals of type sp^3
- If $m+n = 3$: Will need 3 hybrid orbitals of type sp^2
- If $m+n = 2$: Will need 2 hybrid orbitals of type sp .

* NOTE: Any single electron in an unhybridized orbital will participate in a π bond

- This is the case when we have double or triple bonds

↳ One bond will be a σ bond and the others will be π bonds

↳ Ex:



- **NOTES**
- Only orbitals that contain an electron participating in a σ bond or orbitals containing a lone pair NEED to be hybridized
 - Orbitals that contain an electron participating in a π do NOT need to be hybridized.
 - You need single electrons to form π bonds with another atom.

